



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/816,496

04/01/2004

Mark Y. An

037607-0238

8612

34099 7590 05/27/2009

FANN-MKE C/O
FOLEY & LARDNER LLP
777 EAST WISCONSIN AVENUE
MILWAUKEE, WI 53202-5306

EXAMINER

TROTTER, SCOTT S

ART UNIT

PAPER NUMBER

3694

MAIL DATE

DELIVERY MODE

05/27/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|----------------------------------|--|
| Office Action Summary | Application No. 10/816,496 | Applicant(s) AN ET AL. | |
| | Examiner SCOTT S. TROTTER | Art Unit 3694 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-16 and 20-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-16 and 20-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment received February 17, 2009. This action is Non-Final.

Response to Argument

2. Rejections under 35 USC 112 and 35 USC 101 are withdrawn due arguments or the applicant's amendment.

3. Applicant's arguments regarding the 103 rejection are moot due to a new grounds of rejection.

4. Applicant(s) attempt at traversing the Official Notice findings as stated in the previous Office Action (Paper No. 20081110, Paragraph No. 10) is inadequate. Adequate traversal is a two step process. First, Applicant(s) must state their traversal on the record. Second and in accordance with 37 C.F.R. §1.111(b) which requires Applicant(s) to specifically point out the supposed errors in the Office Action, Applicant(s) must state *why* the Official Notice statement(s) are not to be considered common knowledge or well known in the art. In this application, while Applicant(s) have clearly met step (1), Applicant(s) have failed step (2) since they have failed to argue *why* the Official Notice statement(s) are not to be considered common knowledge or well known in the art. The applicant's argument seems to be that it would have not been obvious to apply the art not that it was not common knowledge or well know in the art. Because Applicant(s)' traversal is inadequate, the Official Notice statement(s) are taken to be admitted as prior art. See MPEP§2144.03.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11, 16, 20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Keyes et al. (U.S. Patent 7,165,043 B2 hereafter Keyes).

As per claim 11 Keyes teaches:

Machine readable media having stored therein a set of instructions that when executed cause a computer to implement a process for determining a probability of an adverse event in connection with a plurality of loans, the plurality of loans having varying amounts of loan data available, the process comprising:

constructing a first mathematical model for use with loans for which loan data is available for a set of explanatory variables, the set of explanatory variables including variables that relate to risk characteristics of the loan, risk characteristics of collateral for the loan, and risk characteristics of a borrower associated with the loan; (see *Keyes abstract and column 1 line 53-column 2 line 21*)

constructing a second mathematical model for use with loans for which at least some of the loan data for the set of explanatory variables is not available, including estimating the probability of the adverse event for a first group of loans for which the

Art Unit: 3694

loan data is available for the set of explanatory variables using the first mathematical model, (*see Keyes column 1 lines 60-65*)

iteratively estimating the probability of the adverse event for the first group of loans using the second mathematical model, (*see Keyes column 2 lines 14-21*)

selecting an optimal set of weighting coefficients for the second mathematical model, the optimal set of coefficients being selected so as to minimize errors in outputs generated by the second mathematical model for the first group of loans relative to outputs generated by the first mathematical model for the first group of loans, and storing a set of error values, the set of error values relating to the errors in the outputs generated by the second mathematical when using the optimal set of coefficients relative to the outputs generated by the first mathematical model; (*see Keyes column 2 lines 14-21 and column 6 lines 11-65*) and

estimating the probability of the adverse event for a second group of loans using the second mathematical model, wherein at least some loan data for the set of explanatory variables is not available for the second group of loans, and wherein estimating the probability of the adverse event for the second group of loans includes randomly drawing error values from the set of error values and adjusting the outputs of the second mathematical model for the second group of loans in accordance with the randomly drawn error values, the randomly drawn error values causing a distribution of the probability values produced by the second mathematical model for the second group of loans to more closely match a distribution of the probability values produced by

Art Unit: 3694

the first mathematical model for the first group of loans. (see *Keyes column 6 lines 4-10*)

As per claims 16 and 22 Keyes teaches:

The machine-readable media of claim 11, wherein the set of explanatory variables includes a credit premium, the credit premium reflecting a premium paid by a borrower in a note rate of the loan as compared to an average note rate of similar loans made to other borrowers. (see *Keyes column 4 lines 1-10*. The credit premium paid is asset data which Keyes calls for data to be evaluated to see if it helps find the assets value.)

As per claim 20 Keyes teaches:

Machine readable media having stored therein a set of instructions that when executed cause a computer to implement a process comprising:

estimating a first set of weighting coefficients for a first mathematical model by performing a first regression operation, the first mathematical model being a function of a predetermined set of loan parameters and the first set of weighting coefficients, the first set of weighting coefficients being associated with respective ones of the predetermined set of loan parameters, the first regression operation optimizing the first set of weighting coefficients based on performance history of a first plurality of loans, the first plurality of loans having loan data available for the predetermined set of loan parameters; (see *Keyes abstract and column 1 line 53-column 2 line 21*)

estimating a second set of weighting coefficients for a second mathematical model by performing a second regression operation, the second model being a function

Art Unit: 3694

of only a subset of the predetermined loan parameters and the second set of weighting coefficients, the second set of weighting coefficients being associated with respective ones of the subset of the predetermined set of loan parameters, the second regression operation causing the second mathematical model to produce a probability distribution which is in overall alignment with a probability distribution produced by the first mathematical, the second mathematical model further being a function of a set of stored error values relating to errors in probabilities produced by the second mathematical model as compared to probabilities produced by the first mathematical model; (see *Keyes column 1 line 60-column 2 line 21 and column 6 lines 11-65*) and

determining the probability of the adverse event using the second mathematical model in connection with a second plurality of loans, including randomly drawing error values from the set of error values and adjusting the outputs of the second mathematical model for the second plurality of loans in accordance with the randomly drawn error values, the randomly drawn error values causing a distribution of the probability values produced by the second mathematical model for the second plurality of loans to more closely match a distribution of the probability values produced by the first mathematical model for the first group of loans. (see *Keyes column 6 lines 4-10*)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 3694

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 12-15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keyes in view of Starkman (U.S. Patent 7,188,084).

As per claim 12 Keyes teaches:

The machine-readable media of claim 11, wherein the adverse event is delinquency.

While Keyes does not explicitly address the kinds of adverse events that effect the valuation of the loan portfolios it teaches valuing, Starkman teaches finding delinquencies to help evaluate loan values. (*see Starkman column 2 lines 45-48*) Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to predict delinquencies since they would affect a loans value.

As per claim 13 Keyes teaches:

The machine-readable media of claim 11, wherein the adverse event is default.

While Keyes does not explicitly address the kinds of adverse events that effect the valuation of the loan portfolios it teaches valuing, Starkman teaches finding defaults to help evaluate loan values. (*see Starkman column 2 lines 29-34*) Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to predict defaults since they would affect a loans value.

As per claim 14 Keyes teaches:

The machine-readable media of claim 11, wherein the adverse event is prepayment.

While Keyes does not explicitly address the kinds of adverse events that effect the valuation of the loan portfolios it teaches valuing, Starkman teaches finding defaults to help evaluate loan values. (see *Starkman column 5 lines 54-61*) Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to predict prepayments since they would affect a loans value.

As per claims 15 and 21 Keyes teaches:

The machine-readable media of claim 11, wherein storing the set of error values includes partitioning the error values into different partition groups, each respective error value being partitioned according to a length of time of delinquency of a corresponding one of the loans. (See *Keyes figure 10*)

While Keyes does teach clustering assets by key characteristics it does not explicitly teach length of time delinquent as one of those key characteristics Starkman teaches using the term of delinquency to predict future payment behavior. (see *Starkman column 3 lines 3-63*) Therefore it would have been obvious to a person of ordinary skill in the art to use length of time of delinquency to partition (or cluster) the data with term of delinquency being one of the terms to considered since it is used to help determine the value of the loans.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keyes in view of admitted prior art.

As per claim 23 Keyes teaches:

The machine-readable media of claim 22, wherein the credit premium is determined by starting with an initial note rate, adjusting the initial rate up and/or down

Art Unit: 3694

in accordance with variables associated with the mortgage loan to arrive at a predicted note rate, and comparing the predicted note rate with a note rate paid by the borrower to arrive at the credit premium. (see *Keyes column 4 lines 1-10*. The credit premium paid is asset data which Keyes calls for data to be evaluated to see if it helps find the assets value.)

Keyes does not explicitly teach using the iterative method to solve for a value but it is admitted prior art in the art of mathematics to iteratively solve for a value as described in claim 23 with an example being the optimal algorithm for finding a random number between 1 and 100 where one can only find out if the number is higher or lower is to always pick the middle of the range starting with 50. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to solve for the credit premium using that method since Keyes called for the use of iterative processes. (see *Keyes column 4 lines 1-10*)

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to

Applicant's disclosure:

- Iterative method – “A general term for numerical approximation by repeated application of a given approximation method. Frequently used iterative methods are often known by the names of the originator's e.g. the Picard-Lindelof iteration method and the Newton's method. Also, iteration, iterative process.” Copyright 1992 Academic Press Dictionary of Science and Technology.

Art Unit: 3694

11. Examiner's Note: The Examiner has cited particular columns and line numbers in the references as applied to the claims for the convenience of the applicant.

Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

12. Any inquiry concerning this communication from the examiner should be directed to Scott S. Trotter, whose telephone number is 571-272-7366. The examiner can normally be reached on 8:30 AM – 5:00 PM, M-F.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James P. Trammell, can be reached on 571-272-6712.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

15. The fax phone number for the organization where this application or proceeding is assigned are as follows:

(571) 273-8300 (Official Communications; including After Final
Communications labeled "BOX AF")

Art Unit: 3694

(571) 273-6705 (Draft Communications)

sst

May 27, 2009

/James P Trammell/

Supervisory Patent Examiner, Art Unit 3694